

## WHALE-LICE (AMPHIPODA: CYAMIDAE) AND SEA LICE (COPEPODA: CALIGIDAE) FROM STRANDED WHALES IN THE FIRTH OF FORTH

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The Cyamidae is a family of amphipod crustaceans adapted as ectoparasites of cetaceans, hence their common name of whale-lice. Although relatively large, on account of their peculiar habitat, they are a rather poorly studied group. New species are still being discovered even within British waters (Lincoln & Hurley, 1974a) and much remains to be learned about their ecology and phylogeny. The distribution of the various whale-lice species between different species of whale and dolphin may provide some clues regarding the co-evolution of cetaceans and their parasites (Avdeev, 1990).

Copepod crustaceans, on the other hand, are well known as "Sea Lice" or "Gill Maggots" parasitising many types of fish but to date only two species have been associated with whales.

The stranding of two uncommon whale species in the Firth of Forth within recent years has provided an opportunity to collect new material of their crustacean ectoparasites.

In October 1988, a Bottle-nosed Whale, *Hyperoodon ampullatus* (Forster, 1770), was stranded at Culross (Kitchener, 1989). The whale, a female about 6 m long, was lying on its side and appeared to have only recently died. The body was examined by the author and was found to have two whale-lice and two sea lice on its exposed flanks. The whale-lice, 3.5 and 3.6 mm long (excluding antennae) were both identified, using Leung (1967), as male *Platycyamus thompsoni* (Gosse, 1855), (Fig. 1). The sea lice, 4.0 and 4.5 mm long (excluding furcal setae), comprised a male and female *Caligus elongatus* Nordmann, 1832 (Fig. 2).

In March 1997, a Sperm Whale (*Physeter catodon* Linnaeus, 1758) entered the Forth Estuary and seemed unable to find its way back out to deeper water. The whale, an adult male, was observed in several localities over a period of 12 days and its plight aroused considerable media attention (eg. The Herald newspaper, 31/3/97). It eventually became stranded at Airth and subsequently died. The body was examined by scientists from the National Museum of Scotland (Kitchener, 1997) and from Deep Sea World (North Queensferry). Hundreds of whale-lice were observed around the anal vent area and a sample of ten of these were removed and sent to the author for identification. They ranged in size from 5.0 to 6.9 mm (excluding antennae) and consisted of seven female and three male *Cyamus catodontis* Margolis, 1954, (Fig. 3).

Both the above whale-lice species have been rarely recorded in UK waters. In his redescription of *Platycyamus thompsoni*, Wolff (1958) gives its distribution as England (type local-

ity), Denmark, the Faroes and Spitzbergen although he recognises that its only known host, the Bottle-nosed Whale, has a much wider distribution. Stock (1973) highlights additional material collected in Dutch waters in 1931 but overlooked in Wolff's study. In their review of cyamid material held at the British Museum, Lincoln & Hurley (1974b) cite further specimens from the Norman Collection and also from University College, Dundee but no locality data are available for these. Stranding of Bottle-nosed Whales in the Forth area are summarised by Maclaren (1981) and undoubtedly many of these carried whale-lice. The whale-lice described as "*Cyamus* sp." by Maclaren, removed from a Bottle-nosed Whale stranded at Skinflats, Grangemouth in 1981 (and held at the National Museum of Scotland, NMSZ 1981.30) are most probably *P. thompsoni*. The new material, however, appears to represent the first confirmed record of *P. thompsoni* from Scottish waters.

Four, or possibly five, whale-lice species are known to infest Sperm Whales (Avdeev, 1990). Stock (1973) records *C. catodontis* for the first time in North West European seas and comments on the confusion between some of the species associated with Sperm Whales. The new find apparently represents the first record of *C. catodontis* within UK waters proper.

The occurrence of the copepod *C. elongatus* on a whale is of interest. In his synopsis of copepods associated with marine invertebrates (and whales), Gotto (1993) cites only the harpacticoid *Balaenophilus unisetus* Aurivillius, 1879 which lives among the plates of baleen whales. Several species of the siphonostomatoid genus *Pennella* have also been recorded as parasites of whales though it is now recognised (Hogens, 1987) that all those from cetaceans are probably variants of a single species, *Pennella balaenoptera* Koren & Danielsson, 1877. This species, the largest known copepod, up to 32 cm long, has in fact been recorded in UK waters from a Fin Whale landed at Shetland (Turner, 1905), off St Kilda (Leigh-Sharpe, 1928) and also from a Minke Whale off Tynemouth in 1948 (see Bossanyi & Bull, 1971). In 1855 a Bottle-nosed Whale captured south of the Faroes harboured a *Pennella* which probably refers to the same species (see Turner, 1905).

The presence of *C. elongatus* on a Bottle-nosed Whale is not entirely surprising. According to Kabata (1979) it is probably the most common parasitic copepod in British waters where it infests nearly forty fish species. Caligids have been recorded attaching to a diverse range of vertebrate hosts, including humans, as well as infestations of some invertebrates



Figure 1. Video print of two male *Platycyamus thompsoni*.



Figure 2. Video print of male (above) and female (below) *Caligus elongatus*.

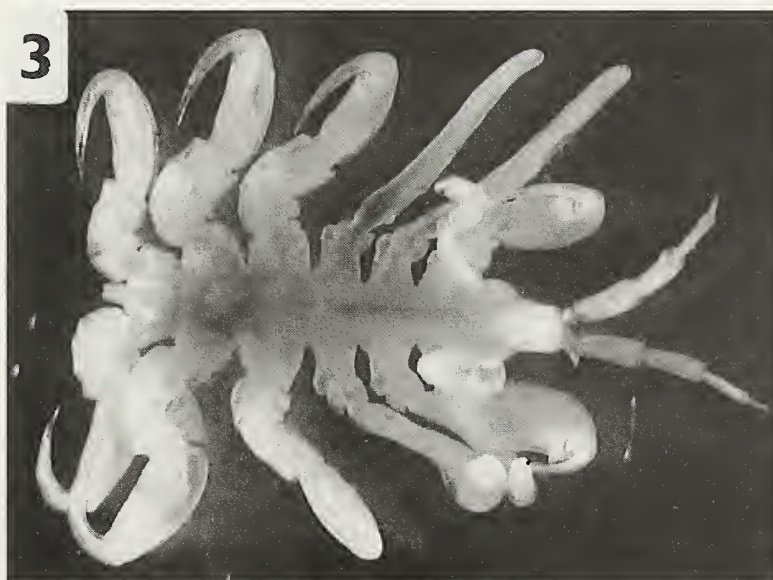


Figure 3. Video print of a male *Cyamus catodontis*, ventral view.

such as farmed shrimps (Ruangpan & Kabata, 1984). Anecdotal accounts also exist of sea lice attaching to commercial divers operating in the North Sea (Cleator, pers. comm.). The new record brings to three the number of copepod species now known to be associated with whales.

#### ACKNOWLEDGEMENTS

I am indebted to Mr Keith Todd of Deep Sea World, North Queensferry, for providing the whale-lice from the stranded Sperm Whale for my examination; to Brian Cleator, Environmental Consultant, Edinburgh, for the account of sea lice on divers; and to Susan Chambers of the National Museum of Scotland, Edinburgh, for information on cyamids held at the museum. All of the new material is now deposited at the above museum (Nos. NMSZ 1997 127-129).

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